1/12

FIG. 1 (PRIOR ART)

200

202 — PAGE

204 — PAGE

} 206

210 —

212 — PAGE

214 — PAGE

216 — PAGE

218 —

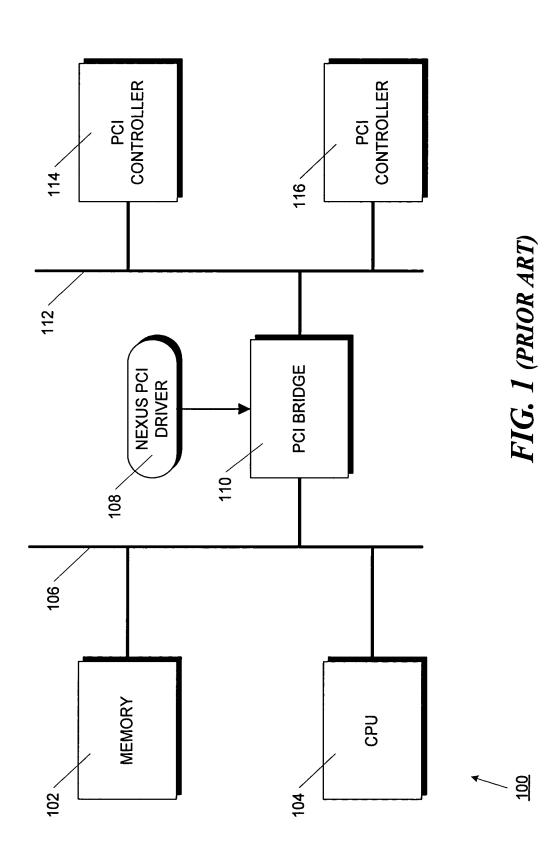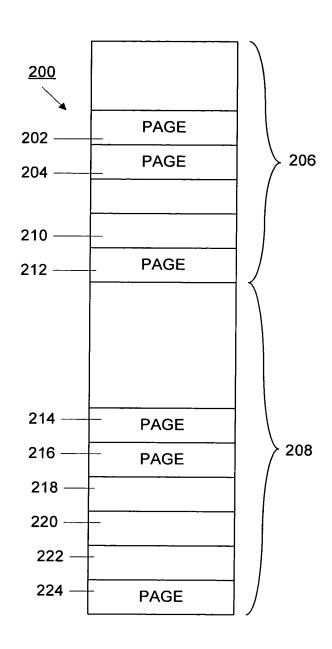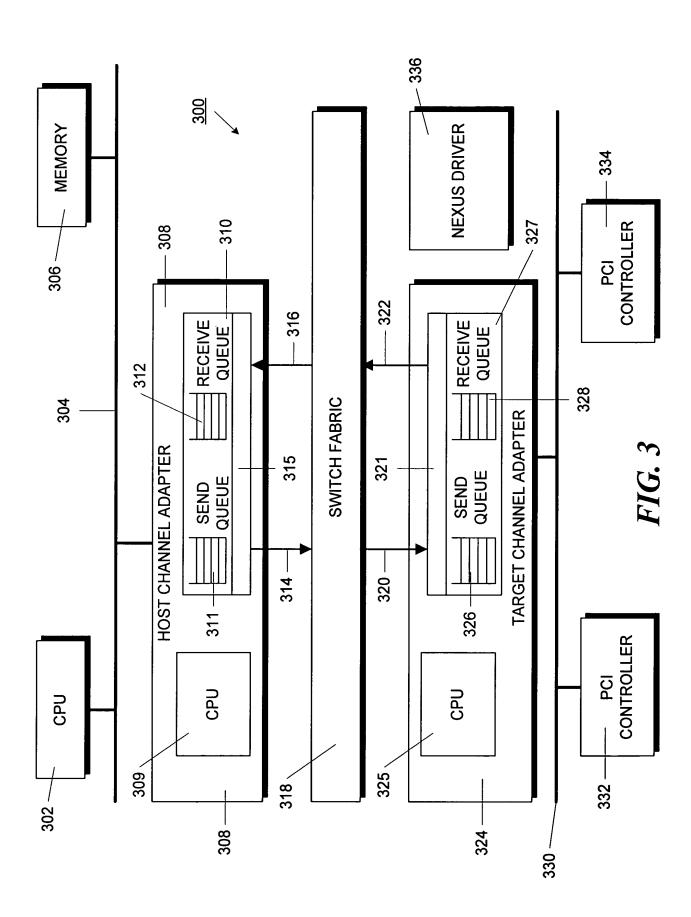220 —

222 —

224 — PAGE

} 208

FIG. 2 (PRIOR ART)

Title: METHOD AND APPARATUS FOR IMPLEMENTING PCI DMA SPECULATIVE ...
Inventor: James M. Avery
Filing Date: Herewith
Serial No: Not Yet Assigned
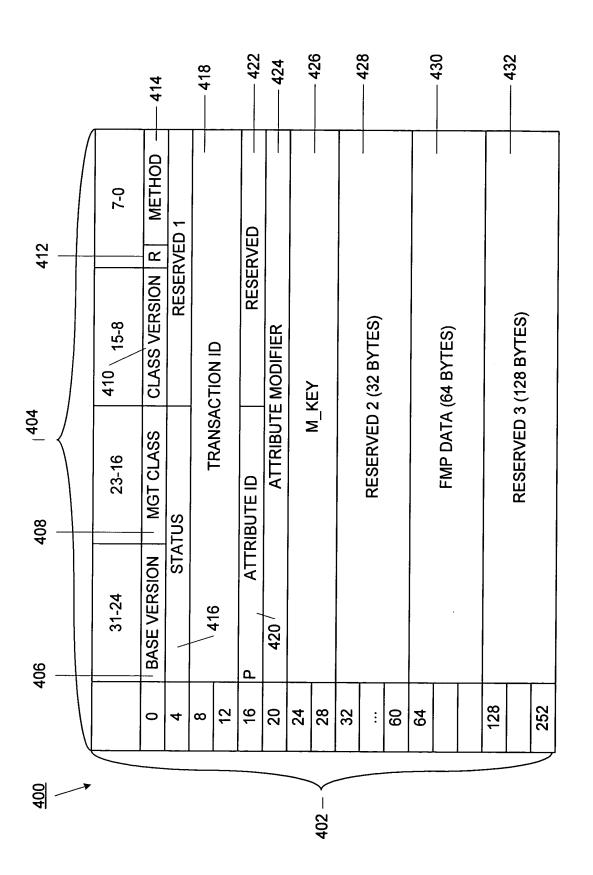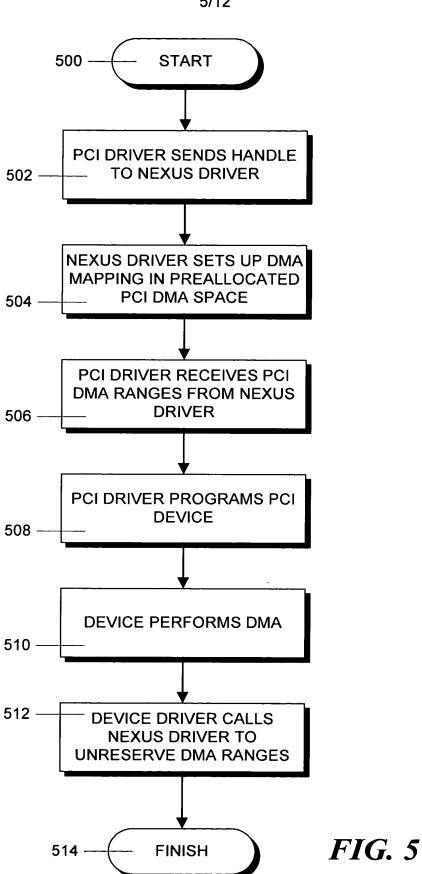Docket No: P4864C1   Customer No. 021127

3/12

FIG. 3

400

	31-24	23-16	15-8	7-0	
0	BASE VERSION	MGT CLASS	CLASS VERSION	R	METHOD
4	STATUS		RESERVED 1		
8	TRANSACTION ID				
12					
16	ATTRIBUTE ID		RESERVED		
20	P	ATTRIBUTE MODIFIER			
24	M_KEY				
28					
32	RESERVED 2 (32 BYTES)				
...					
60					
64	FMP DATA (64 BYTES)				
128	RESERVED 3 (128 BYTES)				
252					

406, 408, 404, 412, 414, 418, 422, 424, 426, 428, 430, 432, 416, 420, 410, 402

FIG. 4

5/12

500 —— (START)

502 —— | PCI DRIVER SENDS HANDLE TO NEXUS DRIVER |

504 —— | NEXUS DRIVER SETS UP DMA MAPPING IN PREALLOCATED PCI DMA SPACE |

506 —— | PCI DRIVER RECEIVES PCI DMA RANGES FROM NEXUS DRIVER |

508 —— | PCI DRIVER PROGRAMS PCI DEVICE |

510 —— | DEVICE PERFORMS DMA |

512 —— | DEVICE DRIVER CALLS NEXUS DRIVER TO UNRESERVE DMA RANGES |

514 —— (FINISH)

FIG. 5

600 — (START)

602 — INITIALIZE IB ADDRESS MAP AND WORK QUEUE ENTRIES

604 — PCI MASTER PRESENTS PCI ADDRESS ON PCI BUS

606 — COMPARE ADDRESS WITH PCI SEGMENT MAP

608 — ADDRESS MATCH? —N→ 610 (RETURN ERROR)

Y

612 — USE ADDRESS TO RETRIEVE R_KEY

614 — USE PCI ADDRESS AND R_KEY AS IB ADDRESS

616 — A

FIG. 6A

618 — **A**

620 — ISSUE RDMA REQUEST

622 — FINISH

FIG. 6B

8/12

FIG. 7

Title: METHOD AND APPARATUS FOR IMPLEMENTING PCI DMA SPECULATIVE ...
Inventor: James M. Avery
Filing Date: Herewith
Serial No: Not Yet Assigned
Docket No: P4864C1   Customer No. 021127

9/12

FIG. 8A
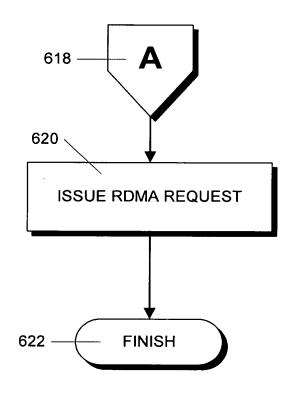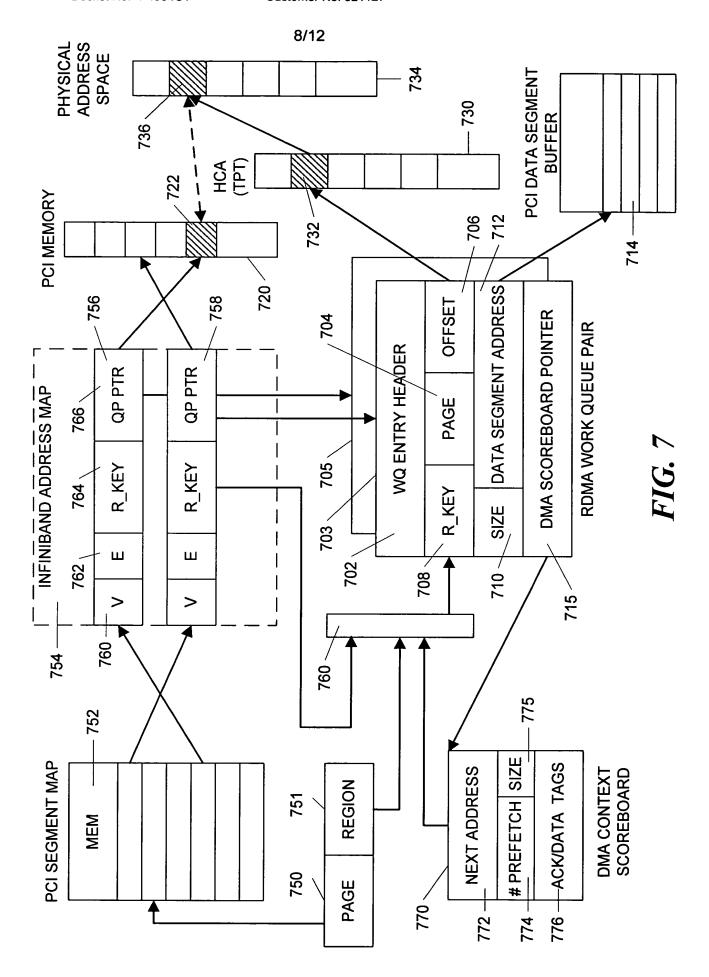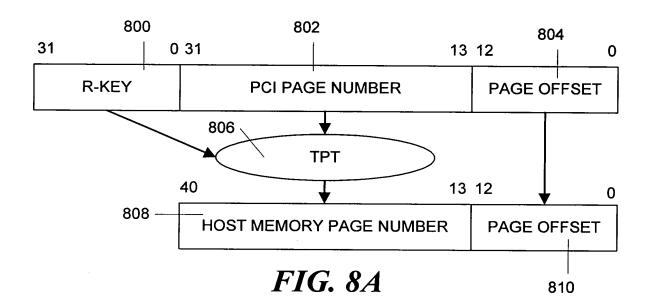
Title: METHOD AND APPARATUS FOR IMPLEMENTING PCI DMA SPECULATIVE ...
Inventor: James M. Avery
Filing Date: Herewith
Serial No: Not Yet Assigned
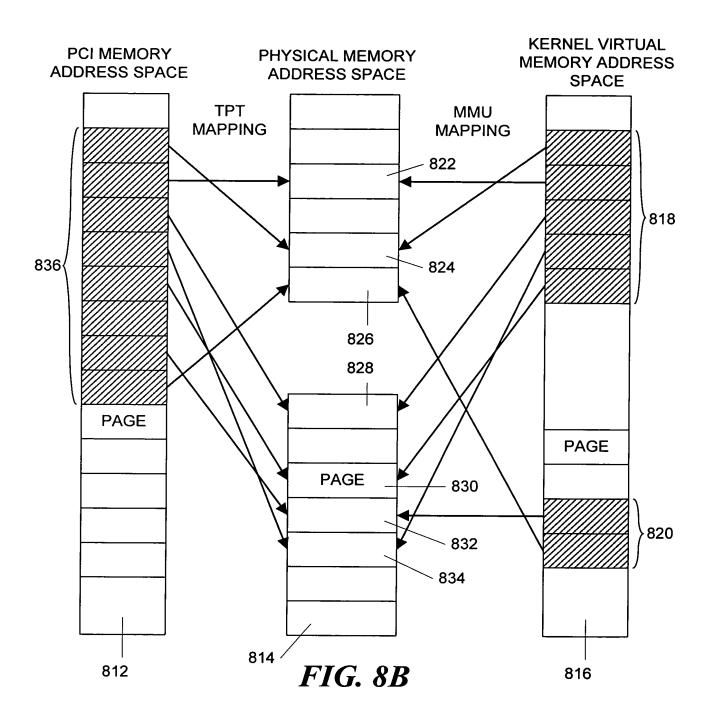Docket No: P4864C1   Customer No. 021127
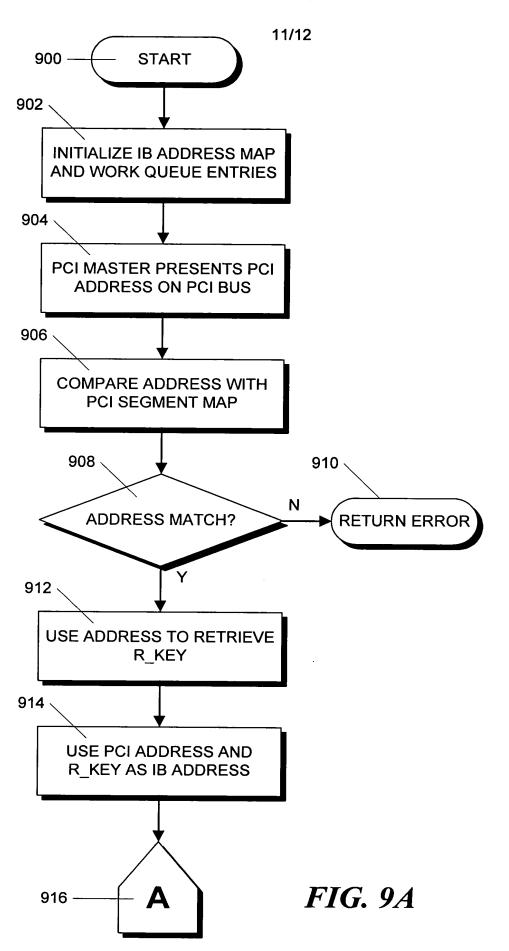
10/12

PCI MEMORY
ADDRESS SPACE

PHYSICAL MEMORY
ADDRESS SPACE

KERNEL VIRTUAL
MEMORY ADDRESS
SPACE

TPT
MAPPING

MMU
MAPPING

822

824

826

828

836

PAGE

PAGE

830

832

834

PAGE

PAGE

818

820

812

814

816

FIG. 8B

11/12

START — 900

902 — INITIALIZE IB ADDRESS MAP AND WORK QUEUE ENTRIES

904 — PCI MASTER PRESENTS PCI ADDRESS ON PCI BUS

906 — COMPARE ADDRESS WITH PCI SEGMENT MAP

908 — ADDRESS MATCH?

N → RETURN ERROR — 910

Y

912 — USE ADDRESS TO RETRIEVE R_KEY

914 — USE PCI ADDRESS AND R_KEY AS IB ADDRESS

916 — A

FIG. 9A

A — 918

920 — ISSUE RDMA READ REQUEST

922 — RESPONSE RECEIVED? N

Y

924 — UPDATE DMA SCOREBOARD

926 — SIZE = REQUESTED SIZE? Y — 928 — FINISH

N

930 — MERGE NEXT ADDRESS WITH R-KEY AND PUSH ONTO WQE

FIG. 9B